Supporting Information

Matta *et al.* 10.1073/pnas.0711038105

SI Text

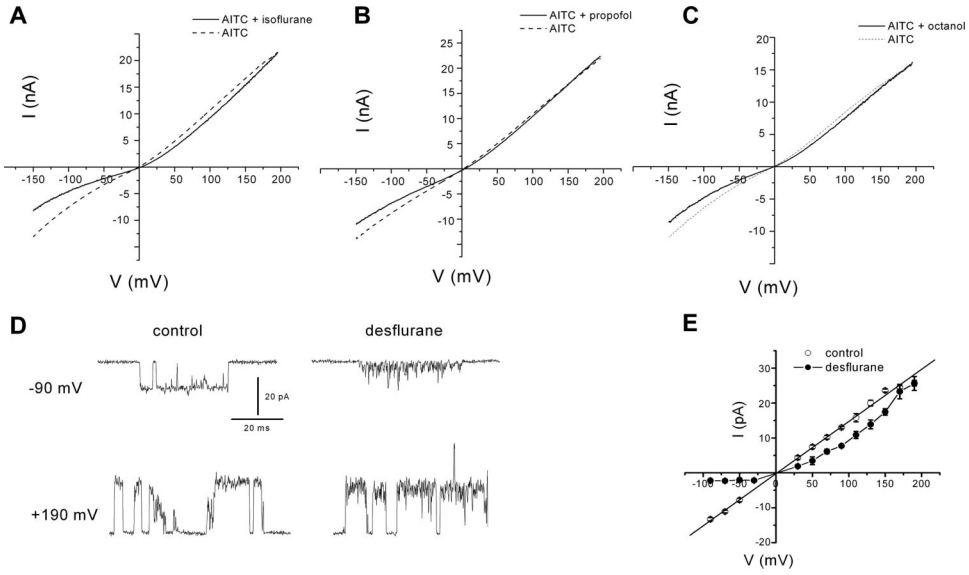

Fig. S1. GAs induce a voltage-dependent block of TRPA1. (*A–C*) Representative current-voltage profile of AITC-evoked TRPA1 currents in HEK293 cells in the presence or absence of isoflurane, propofol, and octanol ($n = 5$). (*D*) Single-channel current traces from cell-attached configuration in the presence or absence of desflurane (1.5 mM) at −90 mV or +190 mV ($n = 4$). (*E*) Current-voltage profile from single-channel peak amplitude measured from all-points histograms ($n = 4$). In the absence of desflurane, the chord conductance of spontaneous single-channel activity was 145 pS. Note that this value differs from the 110-pS measurement in Fig. 1*D* because of the absence of divalent cations. Spontaneous and GA-induced channel activity of 145 pS was not observed in mock-transfected cells.

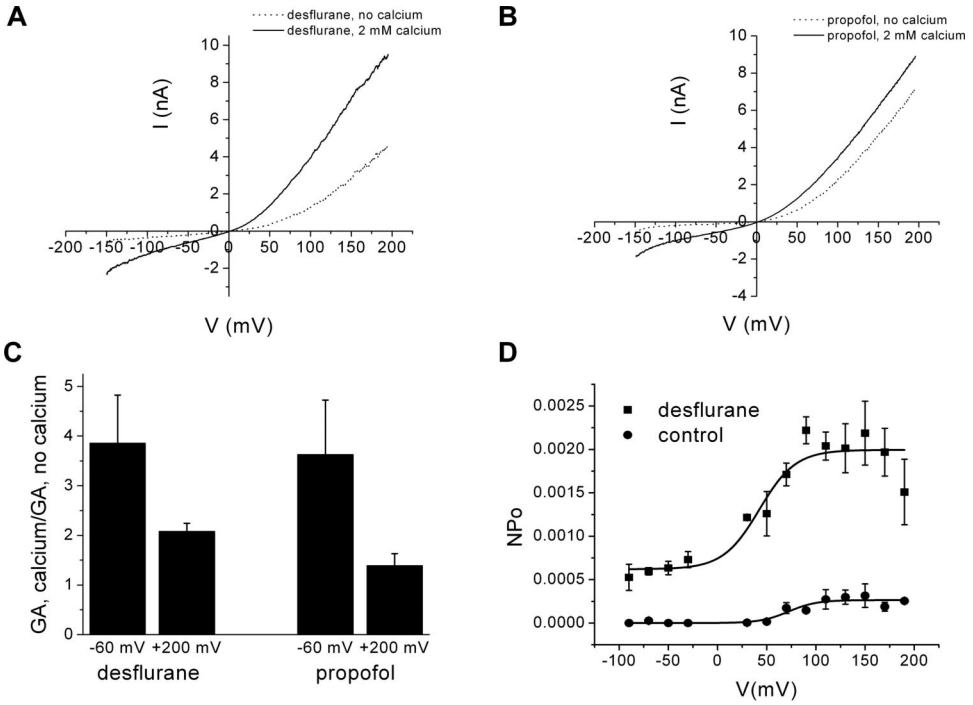

Fig. S2. Calcium and voltage dependence of GA-induced TRPA1 activation. (*A* and *B*) Current-voltage profile of desflurane (0.9 mM) and propofol (100 μM) in the presence or absence of calcium (2 mM). (*C*) Summary graph for fold increase in currents caused by calcium at −60 mV and +200 mV ($n = 5$). (*D*) Boltzmann fits to the voltage-dependent activation in the presence or absence of desflurane (1.5 mM). $V_{1/2}$ and maximal open probability were 72.1 mV, 2.7E-4 for control and 42.5 mV, 2.0E-3 for desflurane. NPo was measured from single-channel currents in the cell-attached configuration. Peak amplitude was measured with an all-points histogram during 750-ms voltage steps ($n = 4$).

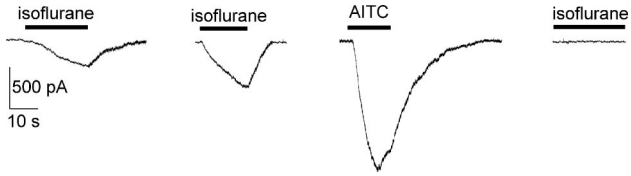

Fig. S3. Relationship between isoflurane and AITC-induced activation of TRPA1. Multiple applications of isoflurane fail to suppress TRPA1 currents in HEK293 cells (in contrast to AITC, which induces irreversible modification of TRPA1 cysteines). However, isoflurane-evoked responses are inhibited after application of AITC (100 μM, $n = 5$).

Movie S1. Application of propofol to the nasal epithelium evokes pain-related behavior (nose wiping) in mice.

Movie S1 (WMV)